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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/081,496	02/20/2002	Benedict J. Costello	M-12070 US	1499

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EXAMINER

FARAHANI, DANA

ART UNIT PAPER NUMBER

2814

DATE MAILED: 02/25/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/081,496

Applicant(s)

COSTELLO ET AL.

Examiner

Dana Farahani

Art Unit

2814

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 24 November 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 and 27-60 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 27-42 is/are allowed.
- 6) ☒ Claim(s) 1, 2- 5, 8-20, 43-46, 49, 50-56 and 60 is/are rejected.
- 7) ☒ Claim(s) 6, 7, 47, 48 and 57-59 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

**DETAILED ACTION**

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made

2. Claims 1, 2, 5, 8-16, 43-46, 49, 50-56 and 60 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yasuda et al., hereinafter Yasuda (U.S. Patent 5,753,911), previously cited, in view of Lee et al., hereinafter Lee (U.S. Patent 5,969,848), a newly cited reference.

Regarding claims 1, 2, 8, 13, 43-45, 49, 50, 53, 54, and 60, Yasuda discloses in figure 10, an electrostatic actuator comprising a stator comprising a first plurality of fingers 703; a rotor (706 and 707) formed in the layer comprising a second plurality of fingers, wherein one or more of the fingers of the second plurality is between the fingers of the first plurality, and one or more fingers of the stator and rotor are positioned above a conducting plane 707 having the same potential as the rotor, and one or more fingers of the rotor has a height less than or equal to one or more fingers of the stator, as can be seen in the figure, such that a vertical force is exerted upon the rotor, the height measured from the bottom of the finger to the top of the finger (see also column 6, lines 4-50, for an explanation of the figure).

Yasuda does not disclose the first and second plurality of fingers are substantially in a plane when no voltage is applied to the actuator, such plane being transverse to direction of the vertical force.

Lee discloses in figure 1, movable finger(s) 13, stationary fingers 14 are in a plane, the plane being transverse to the direction of a vertical force 10. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use inter-digitized fingers in Yasuda's structure to affect the driving force therein.

Regarding claims 5 and 46, in Yasuda, the rotor 106 forms part of a micro-optical component shown in figure 7.

Regarding claims 9, 10, and 12, in Yasuda, a central portion of the rotor is rotated about an axis (see figure 7, where 107 shown is rotated along the vertical axis).

Regarding claims 11, 51, and 52, see figure 4 of Yasuda, wherein spring 615 is connected to the central portion of the rotor.

Regarding claim 14, in Yasuda, a positive and a negative force is created at the first side (up), and a negative force is created at the second side (down).

Regarding claims 15 and 16, in Yasuda, the actuator pivots about an axis, x, between the first and the second side.

Regarding claims 55 and 56, note that by varying the direction and magnitude of force 12 in the Lee reference, the direction of force 10 would change and thus cause the movable portion to rotate.

3. Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yasuda in view of Lee, as applied to claim 1 above, and further in view of Moresco et al., hereinafter Moresco (U.S. Patent 6,539,137), previously cited.

Yasuda in view of Lee, renders obvious the limitations in the claims, as discussed above, except for a conductive substrate (the single layer) or an insulating material.

Moresco discloses at column 5, first line, a semiconductor device, wherein an insulating substrate, or interchangeably, a conductive substrate is used. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use an insulating or a conductive single layer (substrate) in the Yasuda in view of Lee structure, since selecting an appropriate material in, according its suitability and availability in the device fabrication environment is considered to be within the level of ordinary skill in the art. *In re Leshin*, 125 USPQ.

4. Claims 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yasuda in view of Lee as applied to claim 16 above, and further in view of Riccobene et al., hereinafter Riccobene (U.S. Patent 6,538,284), previously cited.

Yasuda in view of Lee renders obvious the claimed invention, as discussed above, except for an insulating layer.

Riccobene discloses in figure 1, an SOI structure wherein insulator 20 is sandwiched between semiconductor layer 16 and the top semiconductor layer. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use an SOI structure in the actuator of Yasuda in view of Lee, since it is well known in the art that SOI structures present many advantages compare to semiconductor substrate structures, such as saving the device integrity by appropriate isolation between the device components and the other components of adjacent devices/substrates.

***Product-by-Process Limitations***

A comparison of the recited process with the prior art process does NOT serve to resolve the issue concerning patentability of the product. *In re Fessman*, 489 F2d 742, 180 USPQ 324 (CCPA 1974). Whether a product is patentable depends on whether it is known in the art or it is obvious, and is not governed by whether the process by which is made is patentable. *In re Klug*, 333 F2d 905, 142 USPQ 161 (CCPA 1964). In an ex parte case, product by process claims are not constructed as being limited to the product formed by the specific process recited. *In re Hirao et al.*, 535 F2d 67, 190 USPQ 15, see footnote 3 (CCPA 1976). Therefore, in claims 18 and 58, "...wherein the fingers of the stator and rotor are formed within the silicon layer by etching..." is given no patentable weight.

***Allowable Subject Matter***

5. Claims 27-42 are allowed.
6. Claims 6, 7, 47, 48, 57-59 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
7. The following is a statement of reasons for the indication of allowable subject matter:  
  
The reason for the indication of allowability of claims 6 and 7 is the inclusion of the limitation of the filter elements and an input signal.

The reason for indication of allowability of claims 27-42 is the inclusion therein of the limitation that of the insulating material of the rotor and stator is coplanar when no voltage is applied, and the rotor is formed in the second conductive/insulating layer (claims 27 and 57).

***Response to Arguments***

8. Applicant's arguments with respect to the previously rejected claims have been considered but are moot in view of the new grounds of rejection.

***Conclusion***

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

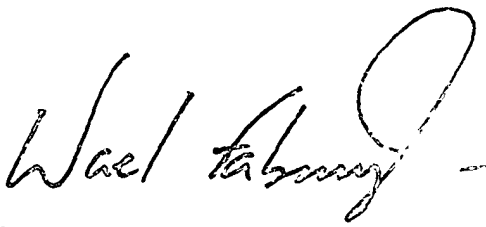
A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dana Farahani whose telephone number is (571)272-1706. The examiner can normally be reached on M-F 9:00AM - 6:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael M Fahmy can be reached on (571)272-1705. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Dana Farahani

  
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